



**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emissions Standards into Procurement Policies.

Rulemaking 06-04-009  
(Filed April 13, 2006)

**COMMENTS OF THE  
NORTHERN CALIFORNIA POWER AGENCY ON THE DECEMBER 13, 2006  
DRAFT *INTERIM OPINION ON PHASE 1 ISSUES: GREENHOUSE GAS  
EMISSIONS PERFORMANCE STANDARD***

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**I. INTRODUCTION**

Pursuant to the California Public Utilities Commission (CPUC or Commission) rules of Practice and Procedure, the Northern California Power Agency<sup>1</sup> (NCPA) provides these comments on the Proposed Decision of President Peevey and Administrative Law Judge Gottstein, *Interim Opinion on Phase 1 Issues: Greenhouse Gas Emissions Performance Standard* (Proposed Decision or PD), issued on December 13, 2006.

All of NCPA’s members are publicly owned electric utilities (POUs). Since the California POUs are not CPUC jurisdictional and not subject to the interim emissions performance standard (EPS or “Standard”) that the CPUC began developing last spring, NCPA did not actively participate in the GHG workshops, nor was NCPA provided an opportunity to respond to the various data requests promulgated in this proceeding. Since

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<sup>1</sup> NCPA is a Joint Powers Agency whose members include the cities of Alameda, Biggs, Gridley, Healdsburg, Lodi, Lompoc, Palo Alto, Redding, Roseville, Santa Clara, and Ukiah, as well as the Bay Area Rapid Transit District, Port of Oakland, the Truckee Donner Public Utility District, and the Turlock Irrigation District, and whose Associate Members are the Lassen Municipal Utility District, Plumas-Sierra Rural Electric Cooperative, and the Placer County Water Agency.

the enactment of Senate Bill (SB) 1368,<sup>2</sup> the regulatory landscape has clearly changed. While the state's POU's are still non-CPUC jurisdictional, under SB 1368 the CPUC's EPS has the potential to greatly impact the POU's; as the Proposed Decision notes, the performance standard requirement directed by SB 1368 should be consistent<sup>3</sup> for both POU's and the CPUC jurisdictional load serving entities (LSEs). (PD at p. 3)

Accordingly, since the passage of SB 1368, NCPA has made every effort to participate in the CPUC's greenhouse gas (GHG) proceeding, despite the fact that this proceeding has been ongoing for months before NCPA's involvement. NCPA's effort to participate has also been hampered by resource constraints (given the ongoing California Energy Commission (CEC) GHG proceeding) and the *extremely* short and aggressive schedules put into place.

SB 1368 requires that the CEC develop an EPS for the state's POU's, and requires that its Standard for POU's be consistent with the Standard developed by this Commission. Adding a further level of complication, the CEC has not been given sufficient time to fully explore and develop a Standard for the POU's. As a result, the CEC has expressed its intent to adopt the record from the CPUC's proceeding and use that information in the development of the EPS applicable to the POU's. Accordingly, NCPA offers these comments in the interest of providing a more robust record upon which the CPUC can base the adoption of its Standard.

In many respects, the Proposed Decision is well reasoned and consistent with the intent and direction provided in SB 1368. However, there are several areas in which NCPA believes that the data responses upon which the Commission's conclusions are founded are either incorrectly interpreted or are insufficient to support the conclusions reached in the Proposed Decision.<sup>4</sup> NCPA offers these comments on those limited instances, as more fully discussed below. NCPA also fully supports the comments on the

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<sup>2</sup> SB 1368 adds sections 8340 and 8341 to the Public Utilities Code, effective January 1, 2007.

<sup>3</sup> It is important to note, however, that while SB 1368 requires the CEC and CPUC Standards to be consistent, it does not require that they be identical.

<sup>4</sup> NCPA understands that there were no formal hearings in this proceeding and that the record was established based on comments filed by the parties and responses to the data requests propounded by the Assigned Administrative Law Judge. While certainly helpful, such information should not, and cannot, be given the same weight as testimony (either written or oral) that is subject to cross-examination.

Proposed Decision filed by the California Municipal Utilities Association and the Sacramento Municipal Utility District.

## **II. COMMENTS**

NCPA offers the following comments on the PD's proposed adoption of a 1,000 pounds per of carbon dioxide per megawatt hour (lbs. CO<sub>2</sub>/MWh) emissions Standard, versus the 1,100 lbs. CO<sub>2</sub>/MWh Standard set forth in the revised Staff Proposal. Staff properly concluded, consistent with the clear direction in SB 1368, that the Standard should be no lower than 1,100 lbs. CO<sub>2</sub>/MWh, and the Proposed Decision should be corrected to reflect this.

### **A. The Emissions Standard Should be No Lower Than 1,100 lbs. CO<sub>2</sub>/MWh.**

The PD's rejection of the 1,100 lbs. CO<sub>2</sub>/MWh limit set forth in the Staff Proposal is without a factual or legal basis. The Commission should revise the PD to adopt a standard no lower than a 1,100 lbs. limit on CO<sub>2</sub> emissions from all sources, which would be consistent with the intent of the legislation, yet would not thwart development of smaller, but necessary facilities to produce Baseload Generation.

The Legislature clearly expressed its intent that existing combined-cycle natural gas powerplants (CCGT), as well as those that have been approved by the CEC by June 30, 2007, will be deemed to be in compliance with the Standard. The Proposed Decision properly concludes that new and renewed contracts with facilities that were originally deemed compliant (with limited exceptions noted in the Interim Rules – Rule 3) are not “covered” under the Standard. Accordingly, the EPS would apply only to new investments in *new* generating resources, or new and renewed contracts in existing resources that are not CCGT. The PD notes that the 1,000 lbs. CO<sub>2</sub>/MWh Standard is “lower than the oldest, most inefficient ‘deemed-compliant’ CCGT powerplants still in operation,” and that 1,000 lbs. CO<sub>2</sub>/MWh “reflects the intent of the Legislature to base the EPS on representative CCGT emission rates.” (PD at p. 8) However, this number does not accurately reflect the emissions rate of a CCGT powerplant, as required in §

8341(d)<sup>5</sup>, as this number clearly fails to reflect the actual limitations of some *currently available* state-of-the-art technologies.

Manufacturers' information on the most common and efficient power plants estimate CO<sub>2</sub> emissions levels between 800 and 1150 lbs. per MWh; however small plants (those lower than 500 MW) will likely run towards the higher end of this range. While the proposed 1,000 lbs. Standard falls within this range, it provides no leeway for real life operational concerns. (A useful analogy may be the mileage estimates of the EPA Fuel Economy Guide for new automobiles, which can vary based on a number of factors.)

Available data clearly establishes that even the most technologically up-to-date plants may operate over 1,000 lbs, yet still come in well below the emissions of existing coal-fired plants, which are typically over 2,000 lbs. CO<sub>2</sub>/MWh. A Standard of no lower than 1,100 lbs. CO<sub>2</sub>/MWh is also below a technologically advanced coal-fired plant, which, without sequestration of the effluent CO<sub>2</sub>, will have emissions of greater than 1,600 lbs. CO<sub>2</sub>/MWh. For example, one newly licensed 250 MW combined cycle powerplant, which is a medium size plant, is operating at 1,022 lbs. CO<sub>2</sub>/MWh. The plant, which began operation in 2006, has two GE Frame 7EA combustion turbines, each with a GE generator in combined cycle operation. If the lower Standard proposed in the PD is adopted, a new powerplant built with even this state-of-the-art proven technology for plants of this size would not be compliant. While the proposed EPS would have this existing plant "deemed-compliant," the same technologies if used to build new CCGT plants, would not meet the 1,000 lbs. CO<sub>2</sub>/MWh Standard, but would qualify for the more reasonable Standard of no lower than 1,100 lbs. CO<sub>2</sub>/MWh. The 1,000 lbs. Standard would eliminate the possibility of building such a plant, clearly not the intent of the Legislation. As discussed below, there are also compelling operational reasons to allow for the development of new and smaller plants.

**B. A Standard of No Lower Than 1,100 lbs. CO<sub>2</sub>/MWh is Necessary for Smaller Load Serving Entities.**

**1. The Proposed EPS Does Not Adequately Address Smaller Facilities.**

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<sup>5</sup> Unless otherwise noted, all code sections shall reference the Public Utilities Code.

NCPA believes that one shortcoming of the proposed 1,000 lbs. Standard is the fact that the only information reviewed was compiled primarily from information received by larger load serving entities (LSEs)<sup>6</sup> and failed to take into account smaller facilities that are likely to be employed by smaller entities. The CPUC-adopted Standard will be applicable to the state's investor owned utilities (IOUs) – all of which are easily classified as large LSEs. However, not all of the CPUC's jurisdictional LSEs are large IOUs. Accordingly, the Standard that is developed must be equitable in its treatment of smaller facilities in terms of new generation resources that would be subject to the EPS (both for new construction, as well as new or renewed contracts).

There are several reasons why smaller facilities designed and intended to produce Baseload Generation have slightly higher emissions rates, yet should still be allowed (and even encouraged).

One existing small utility currently operates an 83 MW GE LM6000 1x1 combined cycle facility. While this facility would be “deemed-compliant” under the proposed Standard, a new similar unit would not. The LM6000 technology is currently the best available for smaller generation units, (and even these units are much too large for some utilities and locations). The facility has an actual 2005 Continuous Emissions Monitoring System (CEMS) registering CO<sub>2</sub> emissions of 1,033 lbs CO<sub>2</sub>/MWh, only slightly higher than the proposed 1,000 lbs/MWh Standard. Of necessity, smaller entities have a greater need for what may be termed “intermediate units,” which can also be called upon for baseload operation when necessary. This “necessity” is due to the rate at which baseload is added with smaller LSEs. For smaller utilities, there is no “perfect” unit that fits the load needs between 60% and 80% capacity factor; this “best-fit” problem is unique to smaller utilities, as their small annual load growth must accumulate over several years before reaching a level to accommodate a more typically sized baseload powerplant into the utility portfolio. However, utilities simply cannot wait until that load materializes to plan for new generation resources. A slightly higher standard of no lower than 1,100 lbs./MWh would allow for these smaller powerplants “bridging” from intermediate to baseload units to continue to play a vital role in the resource planning of

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<sup>6</sup> In these comments, NCPA uses the term “load serving entities” or “LSEs” to reflect the CPUC-jurisdictional entities as that term is used on § 380.

smaller utilities. While SB 1368 does not specifically reference “intermediate” plants, to the extent that these facilities are designed and intended to produce Baseload Generation such resources qualify for consideration under the statute. In addition to providing necessary resource adequacy and reliability, they continue to operate at less than half of the proposed emissions of a coal-fired generation resource (i.e., less than 1,100 lbs. CO<sub>2</sub>/MWh for the smaller LM6000 versus in excess of 2,000 lbs. CO<sub>2</sub>/MWh for a typical coal-fired powerplant).

While larger facilities may appear more economical – both in terms of their reduced risk to California in meeting future GHG compliance and in terms of their total operation costs – there are many reasons why it is beneficial to have smaller resources closer to the load base. The most crucial of these – and a factor that the CPUC is required to take into account in establishing the GHG Standard – is reliability. California’s electric utilities are being required to acquire more and more resources within their “local area,” and it is not always feasible to build a large CCGT or other gas fired plants in smaller load pockets. Furthermore, transmission constraints across the state make it undesirable for an LSE (or POU) to acquire too many remote resources; those that are distant from the load being served. Accordingly, risk management – in terms of reliability and economic efficiency – requires a mixed energy portfolio. This issue is especially critical in light of the fact that utilities will be required to provide *local* capacity in constrained areas, and the California Independent System Operator has determined that *most* local areas are constrained.

## **2. The Proposed 1,000 lbs. CO<sub>2</sub>/MWh Limit Discriminates Against Smaller Powerplants.**

Simply put, in the case of powerplants and CO<sub>2</sub> emissions, size matters. Furthermore, by necessity, not all powerplants can or should be 500 MW, and the EPS must take into account the physical characteristics of different size powerplants. The data used to determine the 1,000 lbs. limit fails to address the very real physical reasons that larger units are more efficient. These physical reasons include thermodynamics, friction loss, and auxiliary plant loads.

The single greatest impact comes from the thermodynamics of the powerplant – the efficiency of the powerplant cycle is driven by the maximum temperature that can be achieved. Larger units contain additional features that allow the metals to survive higher temperatures. For example, the newest GE Frame 7H has a firing temperature of approximately 2,600 degrees F, while the GE LM6000 (a popular smaller unit) has an estimated firing temperature of 2,100 to 2,250 degrees F. To a lesser degree, friction and auxiliary plant load also increase in efficiency with the size of the equipment. With regard to friction, there will always be friction loss associated with equipment; if you use a larger piece of equipment there will be an incremental increase in the friction losses that tends to be a smaller percentage of the total energy in the system. Likewise with regard to auxiliary plant load, since all combined cycle plants have basically the same equipment, as the components get larger, the more efficient they tend to be, resulting in the auxiliary load of a large plant tending to be a smaller percentage of the total energy than in a smaller plant.

**C. A 1,000 lbs. CO<sub>2</sub>/MWh Standard is Not Supported by the Data Responses.**

Despite the data responses presented by the parties regarding the actual CO<sub>2</sub> emissions levels of generating facilities, the Proposed Decision rejects this evidence, as well as Staff's recommendation and appears to rely solely on the CEC's CEMS to support its proposed 1,000 lbs. CO<sub>2</sub>/MWh limit. Without further review or analysis, the PD appears to simply adopt the weighted averaged of emissions. The PD's determination to adopt the 1,000 lbs. Standard is arbitrary and unreasonable. In the absence of clear and conclusive evidence showing that a Standard of no lower than 1,100 lbs. CO<sub>2</sub>/MWh would not comply with the mandates of § 8341(d), the Commission should retain a Standard of no lower than 1,100 lbs. CO<sub>2</sub>/MWh proposed by staff in the Final Workshop Report.

While some newer plants would pass a "gateway" standard of 1,000 lbs CO<sub>2</sub>/MWh at their best operating point (full load heat rate), the CEMS data is real data, reflective of the fact that units (in general) often load follow and operate off their optimal efficiency points. The PD errs in reducing the Standard to 1,000 lbs. CO<sub>2</sub>/MWh, while



requiring LSEs to "provide documentation of capacity factors, heat rates and corresponding emission rates that reflect the actual, expected operations of the plant." (PD, Finding of Fact 166) Requiring this kind of documentation actually supports a higher Standard, due to the fact that *actual* operating data is never at the full load heat rate for all hours.

The PD also errs on page 61 in its discussion regarding F-class technology. The PD refers to F class technology as the market price referent with a heat rate of 6,375 Btu/kWh (HHV) and CO<sub>2</sub> emission rate of 765 lbsCO<sub>2</sub>/MWh. (PD at p. 61) This information is simply incorrect, and the Proposed Decision's reliance on this information is misplaced. The HHV Net Heat Rate for an F-class machine is *6,800 to 7,000 Btu/kWh*. For example, two F-class machines powerplants (Calpine-Sutter and Klamath Cogeneration), have CO<sub>2</sub> emission rates of 855 lbsCO<sub>2</sub>/MWh, an emission rate far greater than the amount set forth on p. 61 of the PD. The only current technology that is close to a heat rate of 6,375 Btu/kWh is frame "H" technology. However, this technology is not in commercial operation and clearly cannot be used as a basis for setting an interim Standard.

Additionally, if the Standard is going to be based on "design data," ambient temperatures must be adjusted. Since plants generally do not operate at design conditions, there must be adjustments for ambient temperatures; ambient temperatures are different than design temperatures, and design data do not take into account things such as startups and shutdowns. Further, for new or renewed contracts with a plant that is not deemed compliant, the "design data" must be adjusted to reflect the fact that a powerplant's performance will degrade over time between major overhauls, by about 5%. Accordingly, this should be factored in when determining the threshold amount of the Standard for contracting purposes with other than a new powerplant.

**D. A Standard of No Lower Than 1,100 lbs. CO<sub>2</sub>/MWh is Consistent With the Intent of SB 1368.**

SB 1368 determined that a Standard was necessary not to actually reduce greenhouse gas emissions, but rather to reduce the risk of financial exposure to the compliance costs associated with future GHG emissions laws. NCPA maintains that the

100 pound difference between the Standard proposed in the PD and that which the Staff proposed is not so great that the Staff proposal would expose the state and its ratepayers to greater financial exposure to future compliance costs, but is a high enough number to add considerably to the overall reliability of the state's electric utilities, especially smaller utilities. The evidence clearly shows that the higher 1,100 lbs. Standard proposed by Staff protects against harm of unwarranted financial risks, avoids backsliding, *and* enables all of the state's load serving entities, as well as POU's to operate efficiently and reliably. Accordingly, the Proposed Decision should be corrected to allow for a CO<sub>2</sub> emissions standard of no lower than 1.100 lbs. CO<sub>2</sub>/MWh.

**E. The Proposed Decision Properly Concludes that New and Renewed Contracts with Deemed-Compliant Powerplants are Not Subject to the Standard.**

The PD properly concludes that new contract commitments (including renewal contracts) with facilities that represent deemed-compliant CCGT powerplants are not subject to the EPS as new investments in Baseload Generation, as that term is used in SB 1368. (PD at p. 7, Conclusion of Law 9).

**III. PROPOSED REVISIONS**

NCPA recommends that the Proposed Decision be corrected to reflect the adoption of a standard of no lower than 1,100 lbs. of CO<sub>2</sub> per MWh, and that the following changes to the Findings of Fact and Conclusions of Law be made, as well as corresponding changes to Attachment 7, *Interim EPS Rules*.

Finding of Fact:

52. An EPS performance level of ~~1,000~~ 1,100 lbs of CO<sub>2</sub> per MWh is somewhat above the weighted average of 2004-2005 data of emission rates associated with a broad range of CCGT powerplants of varying vintages, but lower than the emission rates associated with the oldest, most inefficient "deemed compliant" CCGT powerplants still in operation.

54. Based on the record in this proceeding, an EPS emissions rate of ~~1,000~~ 1,100 lbs of CO<sub>2</sub> per MWh is consistent with the intent of the Legislature to base the EPS on

CCGT emission rates, and also allows for a reasonable level of efficiency reduction associated with CCGT technologies that offer the benefit of lower water consumption.

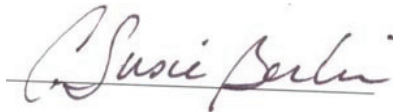
55. At the same time, an EPS emissions rate of ~~1,000~~ 1,100 lbs of CO<sub>2</sub> per MWh avoids establishing a standard that is representative of the most inefficient, older CCGT powerplants in operation, which is appropriate in light of the statute's grandfathering provisions. Those provisions reflect the Legislature's concern that some of the older, less efficient CCGT powerplants in operation would not be able to meet the standard, yet allows new modern plants the flexibility required for efficient powerplant operations.

Conclusion of Law

13. Based on the record in this proceeding and direction of SB 1368, an EPS performance level of ~~1,000~~ 1,100 lbs. of CO<sub>2</sub> per MWh is reasonable and should be adopted.

January 2, 2007

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Susie Berlin", with a horizontal line drawn underneath the name.

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### **CERTIFICATE OF SERVICE**

I hereby certify that I have this day served a copy of COMMENTS OF THE NORTHERN CALIFORNIA POWER AGENCY ON THE DECEMBER 13, 2006 DRAFT INTERIM OPINION ON PHASE 1 ISSUES: GREENHOUSE GAS EMISSIONS PERFORMANCE STANDARD on all known parties to R.06-04-009 by transmitting an e-mail message with the document attached, to each party named in the official service list, last revised December 29, 2006. For those parties that did not provide an email the document was served by first-class mail.

Executed this 2<sup>nd</sup> day of January, 2007.

A handwritten signature in blue ink, appearing to read 'Katie McCarthy', is written over a horizontal line.

Katie McCarthy